**DMMP ISSUE PAPER**

# REVISION OF GUIDELINES FOR BIOACCUMULATIVE CHEMICALS OF CONCERN

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## INTRODUCTION

Washington State's Dredged Material Management Program (DMMP) currently identifies thirty bioaccumulative chemicals of concern (BCoC). If sediment concentrations of any these BCoCs exceed bioaccumulation trigger levels (BT) established by the DMMP, then there is "reason to believe" there is a potential risk to human health and/or that aquatic organisms could accumulate contaminants to levels constituting an "unacceptable adverse effect". In such cases, the DMMP agencies require bioaccumulation testing[1] in addition to toxicity tests in order determine suitability for unconfined, open-water disposal.

## PROBLEM IDENTIFICATION

DMMP agencies developed the existing conceptual framework for conducting and interpreting bioaccumulation tests ten years ago (PSDDA, 1988). The framework for unconfined, open-water disposal of dredged material was based on the best available sediment monitoring and risk assessment information. This information included both human health risk and ecological risk, as required by the Clean Water Act and implementing regulations.

However, because relatively little was known about tissue residue and associated effects in 1988, the guidelines the agencies developed and currently implement relied heavily on human health considerations. To ensure ecological health was addressed, the agencies established safety factors in the form of other guidelines for management of open-water disposal sites[2]. The agencies

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[1] Tributyltin (TBT) is a bioccumulative chemical of concern. However, the trigger for testing TBT is based on pore water concentration rather than a bulk sediment number. See 1996 Issue Paper, *Testing, Reporting, and Evaluation of Tributyltin Data in PSDDA and SMS Programs.*

[2] Those safety factors included: (1) The agencies decided to regulate dredged material management units (DMMU) at the level of a barge load (i.e., 4000 cubic yard) in areas of high contamination; (2) in the absence of biological testing results to the contrary, Tier II chemical testing would determine a DMMU unsuitable for disposal if any one chemical exceeded its screening level threshold; (3) a suite of biological tests were specified for Tier III; and (4) specific site use and monitoring requirements were imposed, with public accountability requirements, to demonstrate that site condition objectives were met. These factors were imposed to limit overall concentrations of chemical of concern at the disposal sites. Other management factors were identified to be considered by agency representatives that could be imposed during individual permit review that would reduce or eliminate potential long-term exposure (esp. bioaccumulation) following disposal. Finally, it was recognized that in the event site monitoring identifies a chemical or biological effects problem, adjustments to the testing regime can be accomplished as a site management action.

recognized that issues associated with bioaccumulation would need to be revisited as more tissue-effects data and ecological risk information became available.

For several reasons, the DMMP now needs to re-evaluate the framework for assessing bioaccumulation and biomagnification of contaminants at disposal sites and the consequent risk to ecologically relevant communities and human health. First, some of the human health information on which existing BTs are based needs to be updated (e.g., fish consumption rates). Second, there have been many advances since 1988 in the state of knowledge of bioavailability, bioaccumulation, biomagnification and ecological risk. Finally, the recently finalized national *Evaluation of Dredged Material Proposed for Discharge in Waters of the United States* or "Inland Testing Manual" (Corps of Engineers/EPA, 1998), requires EPA Regions and Corps Districts to develop CoC lists as part of their regional implementation.

## PROPOSED ACTIONS

The DMMP proposes two actions:

1. ecological risk shall be recognized as a basis for revising the DMMP bioaccumulation framework and guidelines
2. a process which includes technical and policy review by stakeholders, regulators and the public shall be established for making such revisions

The agencies propose the following process for re-evaluating the bioaccumulation framework and guidance.

- Review technical information and prepare technical support document (completed spring 1998)
- Peer and public (SMARM) review of technical report (spring 1998)
- Convene work group to recommend revisions to BCoC list (summer/fall 1998)
- Peer and public review of revised BCoC list (same)
- Convene work group to revise/develop bioaccumulation guidance (fall 1998)
- DMMP decisions on work group recommendations (winter 1998-1999)
- Agencies propose changes to BCoC list, and possibly some guidance (SMARM 1999)
- Peer and public (SMARM) review (spring 1999)
- Adopt new BCoC list and preliminary implementation guidance (summer 1999)
- Work group makes recommendations on remaining bioaccumulation guidance (fall 1998 – fall 1999)
- Agencies propose changes to remaining guidance (SMARM 2000)
- Peer and public (SMARM) review (spring 2000)
- Adopt remaining bioaccumulation guidelines 2000

The agencies anticipate this proposed process for re-evaluating bioaccumulation issues, and resulting regulatory implications, may require as much as two years to complete. As an early step, we commissioned EPA staff to review and compile technical information pertaining to bioaccumulation and prepare a report. The draft report underwent peer review in early 1998.

The final report will be presented separately (see draft status report *Technical Support Document for Revision of the Bioaccumulative Chemicals of Concern List*). The agencies envision this report will be considered in developing a new BCoC list.

Establishing an appropriate BCoC list for this geographic region should provide the basis for future work, e.g., standardizing protocols and procedures, revising or establishing new effects-based BT values, development of effects-based interpretive standards for test results, etc.

Subsequent steps proposed above involve convening one or more external work groups. The DMMP agencies are seeking comments on how to best use work groups cited in the proposed process. The DMMP process for proposing significant changes to the program has typically involved two critical, but administratively separate, steps. First, a technical workgroup was convened to ensure that the technical foundation and attributes of the specific proposal reflected current scientific knowledge. Second, a regulatory workgroup was convened to evaluate and/or determine how a proposed change, e.g., new toxicity test, should be integrated into the existing regulatory structure.

However, the role of "technical" v. "regulatory" work groups may be less distinct for the issue of bioaccumulation and consequent ecological risk. Thus, a two work group process may not be as efficient as establishing a dedicated Bioaccumulation Workgroup that will be responsible for re-evaluating the conceptual framework for addressing bioaccumulation within the overall context of dredged material management (e.g., confined as well as unconfined disposal). Like the original PSDDA Evaluation Procedures Work Group, this Bioaccumulation Work Group would be open to the public and would solicit the active participation of affected users (e.g., Port Districts).

**REFERENCES**

PSDDA. 1988. Evaluation Procedures Technical Appendix (EPTA) - Phase I. U.S. Army Corps of Engineers - Seattle District; U.S. Environmental Protection Agency - Region X; Washington State Department of Natural Resources; Washington State Department of Ecology.

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